

Philips Achieva MRI Service

This new volume of The Core Curriculum Series is an indispensable guide for radiology residents' pediatric rotations and an excellent study tool for written boards or recertification exams. Like other volumes of The Core Curriculum Series, the book focuses on one rotation area and covers the essential information readers need to do well on and presents key information about evaluation of various diseases with all current imaging modalities. The user-friendly format includes hundreds of illustrations, margin notes, key review points, chapter outlines, tables, bulleted lists, boxed text, and an easy-to-follow layout. A bound-in image bank CD-ROM contains all the images in the book and can copy/paste or export the figures to programs such as PowerPoint.

The 41st Annual International Conference of the IEEE EMBS, took place between July 23 and 27, 2019, in Berlin, Germany. The focus was on "Biomedical engineering ranging from wellness to intensive care." This conference provided an opportunity for researchers from academia and industry to discuss a variety of topics relevant to EMBS and Computational Human Models. At this session, a bevy of research related to the development of human phantoms was presented, together with a substantial variety of practical applications explored through simulation.

MRI from Picture to Proton presents the basics of MR practice and theory in a unique way: backwards! The subject is approached just as a new MR practitioner would encounter MRI: starting from the images, equipment and scanning protocols, rather than pages of physics theory. The reader is brought face-to-face with issues pertinent to background as their experience of scanning grows. Key ideas are introduced in an intuitive manner which is faithful to the underlying physics but avoids the need for difficult or distracting mathematics. Additional explanations for the more technically inquisitive are given in optional secondary text boxes. The new edition is fully up-dated to reflect the current state of the art. **Chapter on parallel imaging. Informal in style and informed in content, written by recognized effective communicators of MR, this is an essential text for the student of MR.**

Physical Background and Medical Applications
Pediatric Neurology Editor's Pick 2021

Nanomedical Device and Systems Design
MRI Atlas of the Human White Matter

Hyperpolarized Xenon-129 Magnetic Resonance
Adaptive Motion Compensation in Radiotherapy

In Contrast-Enhanced Clinical Magnetic Resonance Imaging, Val M. Runge and other leading experts present an overview of the basic principles regarding MR contrast media, a review of clinical applications in the head, spine, and body, and a look at future developments. Their focus is on clinical applications, with extensive illustrations to demonstrate the use of MR in each anatomic area and to aid in film interpretation.

This book constitutes the refereed proceedings of the Second International Workshop on Machine Learning for Medical Reconstruction, MLMIR 2019, held in conjunction with MICCAI 2019, in Shenzhen, China, in October 2019. The 24 full papers presented were carefully reviewed and selected from 32 submissions. The papers are organized in the following topical sections: deep learning for magnetic resonance imaging; deep learning for computed tomography; and deep learning for general image reconstruction.

External-beam radiotherapy has long been challenged by the simple fact that patients can (and do) move during the delivery of radiation. Recent advances in imaging and beam delivery technologies have made the solution—adapting delivery to natural movement—a practical reality. Adaptive Motion Compensation in Radiotherapy provides the first detailed treatment of online interventional techniques for motion compensation radiotherapy. This authoritative book discusses: Each of the contributing elements of a motion-adaptive system, including target detection and tracking, beam adaptation, and patient realignment Treatment planning issues that arise when the patient and internal target are mobile Integrated motion-adaptive systems in clinical use or at advanced stages of development System control functions essential to any therapy device operating in a near-autonomous manner with limited human interaction Necessary motion-detection methodology, repositioning techniques, and approaches to interpreting and responding to target movement data in real time Medical therapy with external beams of radiation began as a two-dimensional technology in a three-dimensional world. However, in all but a limited number of scenarios, movement introduces the fourth dimension of time to the treatment problem. Motion-adaptive radiation therapy represents a truly four-dimensional solution to an inherently four-dimensional problem. From these chapters, readers will gain not only an understanding of the technical aspects and capabilities of motion adaptation but also practical clinical insights into planning and carrying out various types of motion-adaptive radiotherapy treatment.

Involvement of Blood Brain Barrier Efficacy, Neurovascular Coupling and Angiogenesis in the Healthy and Diseased Brain

Handbook of MRI Pulse Sequences

First International Conference, BIOMESIP 2021, Meloneras, Gran Canaria, Spain, July 19-21, 2021, Proceedings

Brain and Human Body Modeling 2020

Challenges, Possibilities, Visions

Image Principles, Neck, and the Brain

Unique in its focus, this book provides an evidence-based framework for assessing work-related neurological and psychological injuries. Meeting a key need, chapters address a range of problems encountered in the workplace: traumatic brain injury, sports concussion, electrical injury, exposure to neurotoxic substances, posttraumatic stress, depression, and brain and psychological injuries experienced in combat. Professionals will find the best available tools and strategies for conducting effective, ethical evaluations of injured workers, making diagnostic determinations, considering causality, determining disability status, and offering treatment recommendations. The complexities of consulting to attorneys, government agencies, and insurance companies are also discussed.

Quantitative Magnetic Resonance Imaging is a "go-to" reference for methods and applications of quantitative magnetic resonance imaging, with specific sections on Relaxometry, Perfusion, and Diffusion. Each section will start with an explanation of the basic techniques for mapping the tissue property in question, including a description of the challenges that arise when using these basic approaches. For properties which can be measured multiple ways, each of these basic methods will be described in separate chapters. Following the basics, a chapter in each section presents more advanced and recently proposed techniques for quantitative tissue property mapping, with a concluding chapter on clinical applications. The reader will learn: The basic physics behind tissue property mapping How to implement basic pulse sequences for the quantitative measurement of tissue properties The strengths and limitations to the basic and more rapid methods for mapping the magnetic relaxation properties T1, T2, and T2* The pros and cons for different approaches to mapping perfusion The methods of Diffusion-weighted imaging and how this approach can be used to generate diffusion tensor maps and more complex representations of diffusion How flow, magneto-electric tissue property, fat fraction, exchange, elastography, and temperature mapping are performed How fast imaging approaches including parallel imaging, compressed sensing, and Magnetic Resonance Fingerprinting can be used to accelerate or improve tissue property mapping schemes How tissue property mapping is used clinically in different organs Structured to cater for MRI researchers and graduate students with a wide variety of backgrounds

Explains basic methods for quantitatively measuring tissue properties with MRI - including T1, T2, perfusion, diffusion, fat and iron fraction, elastography, flow, susceptibility - enabling the implementation of pulse sequences to perform measurements Shows the limitations of the techniques and explains the challenges to the clinical adoption of these traditional methods, presenting the latest research in rapid quantitative imaging which has the possibility to tackle these challenges Each section contains a chapter explaining the basis of novel ideas for quantitative mapping, such as compressed sensing and Magnetic Resonance Fingerprinting-based approaches

Gels are used in a large variety of commercial and scientific products from drug delivery systems and food science to biomedical sensors. They also are invaluable in MRI physics research where they mimic biological tissue and in radiotherapy quality assurance where they are used to capture the three dimensional radiation dose distribution. This unique book discusses the state-of-the-art of NMR and MRI techniques in studying the physics and chemistry of gel systems, in their application as MRI phantoms and as three dimensional radiation dosimeters. The first part of the book will cover the fundamental physical concepts of gels and the NMR techniques to study gel systems. The second part is dedicated to the application of gels in the life sciences and in the medical practice to validate radiotherapy and new MRI techniques. Filling the gap in literature, this volume provides the scientific reader with an extensive overview of possible techniques and methods to study the interesting properties and applications of gels. For the MRI researcher and medical physicist, the book will be a valuable resource in using gel phantoms for validating contemporary MRI techniques and radiotherapy treatments.

Pediatric Neuroradiology

Magnetic Resonance Neuroimaging

Magnetic Resonance Elastography

Magnetic Resonance Neurography

Pediatric MRI

Concepts, Production, Techniques and Applications

Magnetic resonance elastography (MRE) is a medical imaging technique that combines magnetic resonance imaging (MRI) with mechanical vibrations to generate maps of viscoelastic properties of biological tissue. It serves as a non-invasive tool to detect and quantify mechanical changes in tissue structure, which can be symptoms or causes of various diseases. Clinical and research applications of MRE include staging of liver fibrosis, assessment of tumor stiffness and investigation of neurodegenerative diseases. The first part of this book is dedicated to the physical and technological principles underlying MRE, with an introduction to MRI physics, viscoelasticity theory and classical waves, as well as vibration generation, image acquisition and viscoelastic parameter reconstruction. The second part of the book focuses on clinical applications of MRE to various organs. Each section starts with a discussion of the specific properties of the organ, followed by an extensive overview of clinical and preclinical studies that have been performed, tabulating reference values from published literature. The book is completed by a chapter discussing technical aspects of elastography methods based on ultrasound.

This book constitutes the refereed proceedings of two workshops MAIR/AE-CAI 2013, held in conjunction with MICCAI 2013, held in Nagoya, Japan, in September 2013. The 29 revised full papers presented were carefully reviewed and selected from 44 submissions. The papers cover a wide range of topics addressing the main research efforts in the fields of medical image formation, analysis and interpretation, augmented reality and visualization, computer assisted intervention, interventional imaging, image-guided robotics, image-guided intervention, surgical planning and simulation, systematic extra- and intra-corporeal imaging modalities, and general biological and neuroscience image computing.

The advent of non-invasive imaging technology, such as magnetic resonance imaging (MRI), has allowed biologists and clinicians to make great strides in unraveling the secrets of the brain. In Magnetic Resonance Neuroimaging: Methods and Protocols, expert researchers in the field provide a comprehensive collection of experimental MRI protocols that can be used to non-invasively interrogate the healthy and diseased brain. The chapters are divided into general techniques, such as the measurement of relaxivity, magnetic resonance spectroscopy, diffusion tensor imaging, and MR reporter genes, as well as specific applications in brain imaging, for example, phenotyping transgenic animals, detecting amyloid plaques, and fMRI in psychiatry. As a volume in the highly successful Methods in Molecular Biology™ series, this work contains the type of detailed description and implementation advice that is crucial for getting optimal results. Thorough and cutting-edge, Magnetic Resonance Neuroimaging: Methods and Protocols serves neuroscientists, clinical neurologists, psychiatrists, and radiologists with an excellent compendium of methods easily applied to both animal and human studies and certain to be an excellent resource for translational research.

NMR and MRI of Gels

Pediatric Imaging

At Risk for Neuropsychiatric Disorders: An Affective Neuroscience Approach to Understanding the Spectrum

International Workshops

Quantitative Magnetic Resonance Imaging

Computational Neuroimage Analysis Tools for Brain (Diseases) Biomarkers

This volume provides a comprehensive overview of the methodology, physiology, and contemporary and novel applications of cerebrovascular reactivity (CVR) measurements. The chapters in this book cover topics such as an introduction of the neurophysiology, neuroimaging, and clinical methods for CVR measurement; the use of CVR methods in the study of aging, cerebrovascular dysfunction, dementia, and brain tumors; and recommendations for measurement protocols and future applications in clinical translation. In Neuromethods series style, chapters include the kind of detail and key advice from the specialists needed to get successful results in your research center and clinical investigation. Thorough and comprehensive, Cerebrovascular Reactivity: Methodological Advances and Clinical Applications is a valuable tool that provides researchers in neuroscience and neurology with the latest resources on the measurement, interpretation, and application of CVR measurement. Magnetic resonance imaging (MRI) is a technique used in biomedical imaging and radiology to visualize internal structures of the body. Because MRI provides excellent contrast between different soft tissues, the technique is especially useful for diagnostic imaging of the brain, muscles, and heart. In the past 20 years, MRI technology has improved significantly with the introduction of systems up to 7 Tesla (7 T) and with the development of numerous post-processing algorithms such as diffusion tensor imaging (DTI), functional MRI (fMRI), and spectroscopic imaging. From these developments, the diagnostic potentialities of MRI have improved impressively with an exceptional spatial resolution and the possibility of analyzing the morphology and function of several kinds of pathology. Given these exciting developments, the Magnetic Resonance Imaging Handbook: Image Principles, Neck, and the Brain is a timely addition to the growing body of literature in the field. Covering MRI from fundamentals to practice, this comprehensive book: Discusses the clinical benefits of diagnosing human pathologies using MRI Explains the physical principles of MRI and how to use the technique correctly Highlights each organ's anatomy and pathological processes with high-quality images Examines the protocols and potentialities of advanced MRI scanners such as 7 T systems Includes extensive references at the end of each chapter to enhance further study Thus, the Magnetic Resonance Imaging Handbook: Image Principles, Neck, and the Brain provides radiologists and imaging specialists with a valuable, state-of-the-art reference on MRI.

Neuropsychiatric disorders such as schizophrenia, bipolar disorder, depression, anxiety disorders, and other mental disorders constitute about 13% of the global burden of disease surpassing both cardiovascular disease and cancer. The total cost worldwide of these diseases is estimated to exceed 100 million disability-adjusted life years. In order to begin to address this important problem, the present Research Topic brings together a group of leading affective neuroscience researchers to present their state-of-the-art findings using an affective neuroscience approach to investigate the spectrum of neuropsychiatric disorders from patients to those at risk. They focus on different aspects of the emotional and social cognitive disturbances which are core features of neuropsychiatric disorders. While progress has been slow over last couple of decades, we are finally beginning to glimpse some of the underlying neural mechanisms of the emotional and social cognitive disturbances in patients and those at risk. With the technological advances in affective neuroscience and neuroimaging presented in this volume, we hope that progress will be much swifter in the coming years such that we can provide better care for patients and those at risk.

Cerebrovascular Reactivity

A Clinical Guide

Bioengineering and Biomedical Signal and Image Processing

Machine Learning Used in Biomedical Computing and Intelligence Healthcare, Volume I

Functional Brain Mapping of Epilepsy Networks: Methods and Applications

Machine Learning for Medical Image Reconstruction

Quantitative MRI of the Spinal Cord is the first book focused on quantitative MRI techniques with specific application to the human spinal cord. This work includes coverage of diffusion-weighted imaging, magnetization transfer imaging, relaxometry, functional MRI, and spectroscopy. Although these methods have been successfully used in the brain for the past 20 years, their application in the spinal cord remains problematic due to important acquisition challenges (such as small cross-sectional size, motion, and susceptibility artifacts). To date, there is no consensus on how to apply these techniques; this book reviews and synthesizes state-of-the-art methods so users can successfully apply them to the spinal cord. Quantitative MRI of the Spinal Cord introduces the theory behind each quantitative technique, reviews each theory's applications in the human spinal cord and describes its pros and cons, and suggests a simple protocol for applying each quantitative technique to the spinal cord. Chapters authored by international experts in the field of MRI of the spinal cord Contains "cooking recipes" -examples of imaging parameters for each quantitative technique -designed to aid researchers and clinicians in using them in practice Ideal for clinical settings

MRI Atlas of Human White Matter presents an atlas to the human brain on the basis of T 1-weighted imaging and diffusion tensor imaging. A general background on magnetic resonance imaging is provided, as well as the basics of diffusion tensor imaging. An overview of the principles and limitations in using this methodology in fiber tracking is included. This book describes the core white-matter structures, as well as the superficial white matter, the deep gray matter, and the cortex. It also presents a three-dimensional reconstruction and atlas of the brain white-matter tracts. The Montreal Neurological Institute coordinates, which are the most widely used, are adopted in this book as the primary coordinate system. The Talairach coordinate system is used as the secondary coordinate system. Based on magnetic resonance imaging and diffusion tensor imaging, the book offers a full segmentation of 220 white-matter and gray-matter structures with boundaries. Visualization of brain white matter anatomy via 3D diffusion tensor imaging (DTI) contrasts and enhances relationship of anatomy to function Full segmentation of 170+ brain regions more clearly defines structure boundaries than previous point-and-annotate anatomical labeling, and connectivity is mapped in a way not provided by traditional atlases

Unraveling the functional properties of structural elements in the brain is one of the fundamental goals of neuroscientific research. In the cerebral cortex this is no mean feat, since cortical areas are defined microstructurally in post-mortem brains but functionally in living brains with electrophysiological or neuroimaging techniques - and cortical areas vary in their topographical properties across individual brains. Being able to map both microstructure and function in the same brains noninvasively in vivo would represent a huge leap forward. In recent years, high-field magnetic resonance imaging (MRI) technologies with spatial resolution below 0.5 mm have set the stage for this by detecting structural differences within the human cerebral cortex, beyond the Stria of Gennari. This provides the basis for an in vivo microanatomical brain map, with the enormous potential to make direct correlations between microstructure and function in living human brains. This book starts with Brodmann's post-mortem map published in the early 20th century, moves on to the almost forgotten microstructural maps of von Economo and Koskinas and the Vogt-Vogt school, sheds some light on more recent approaches that aim at mapping cortical areas noninvasively in living human brains, and culminates with the concept of "in vivo Brodmann mapping" using high-field MRI, which was introduced in the early 21st century.

MRI from Picture to Proton

Applied Radiology

JNCI

Quantitative MRI of the Spinal Cord

Methodological Advances and Clinical Applications

Methods and Protocols

This new edition provides an accessible guide to the commonest neurodegenerative diseases, outlining the main clinical features, treatment options and outcomes of the conditions most frequently encountered in clinical practice. Beginning with an overview of the general principles that underlie degeneration, and the contribution of established and new diagnostics techniques, the book goes on to describe the most common neurodegenerative conditions and, new for the second edition, also HIV dementia and multiple sclerosis. Final chapters cover important management issues including the use of palliative care strategies, biomarkers and neuropsychology. Written by experts in the field internationally Neurodegenerative Disorders, Second Edition is a practical guide for clinicians that will be indispensable for the management of these conditions.

Multiple sclerosis (MS) is the most common disabling neurological disease of young adults. More than 2.3 million people are affected by MS worldwide. Symptoms can vary widely, depending on the localization and amount of the damage induced by combined inflammatory, and neurodegenerative processes. Although a cure for MS does not currently exist, therapies can help treat MS attacks, attenuate disease activity, reduce progress of the disease, and manage symptoms. Translational Neuroimmunology in Multiple Sclerosis provides an overview of recent findings and knowledge of the neuroimmunology of multiple sclerosis, from experimental models and the human disease to the translation of this research to immunotherapeutic strategies. Chapters describe genetic and environmental factors underlying the disease pathogenesis of MS as a basis for development of immunotherapies, immunological markers of disease activity, pharmacogenetics, and responses to therapy. Immunomodulatory therapies currently in practice and future therapeutic strategies on the horizon—such as neuroprotective strategies, stem cells, and repair promotion—are discussed. Contributed by renowned leaders in the field, this cross-disciplinary volume is a great resource for basic scientists and clinical practitioners in neuroscience, neurology, immunology, pharmacology, and in-drug development. Provides an overview of recent findings and knowledge of the neuroimmunology of multiple sclerosis and the translation of this research to immunotherapy treatment Edited by renowned leaders in the field of neuroimmunology and multiple sclerosis Contains the latest resource material for basic and clinical scientists and practitioners in neuroscience, neurology, immunology, and pharmacology

Nanomedical Device and Systems Design: Challenges, Possibilities, Visions serves as a preliminary guide toward the inspiration of specific investigative pathways that may lead to meaningful discourse and significant advances in nanomedicine/nanotechnology. This volume considers the potential of future innovations that will involve nanomedical devices and systems. It endeavors to explore remarkable possibilities spanning medical diagnostics, therapeutics, and other advancements that may be enabled within this discipline. In particular, this book investigates just how nanomedical diagnostic and therapeutic devices and systems might ultimately be designed and engineered to accurately diagnose and eradicate pathogens, toxins, and myriad disease states. This text utilizes an author conceptualized exemplar nanodevice and system, the Vascular Cartographic Scanning Nanodevice (VCSN), to explore various prospective design considerations that might facilitate and enable selected functionalities of advanced autonomous nanomedical devices. It showcases a diverse group of expert contributing authors, who describe actual laboratory-based research aimed at the advancement of nanomedical capabilities. It also articulates more highly conceptual nanomedical possibilities and visions relating to the implementation of nanomedical technologies in remote regions and the developing world, as well as nanomedicine in space applications, human augmentation, and longevity. Investigates nanomedical diagnostic and therapeutic strategies that might be applied in remote regions and the developing world Discusses how nanomedicine might be utilized in space applications, inclusive of spacesuits, spacecraft, future human habitats on the Moon and Mars, and deep space Covers how nanomedicine may be implemented in selected forms of human augmentation and toward the potentially radical extension of the human life span This book benefits undergraduate and graduate students who are studying nanotechnology/nanomedicine, as well as medical administrative, scientific research, and manufacturing professionals in this industry.

From Disease Mechanisms to Clinical Applications

Microstructural Parcellation of the Human Cerebral Cortex

MRI for Radiotherapy

Behavioral and Cognitive Impairments Across the Life Span

Motion Sickness

Chemical and Biochemical Approaches for the Study of Anesthetic Function

Providing the first comprehensive book on the current state of hyperpolarized Xenon-129 NMR and MRI, this book is guaranteed to appeal to a wide range of scientists interested in this growing field. It is intended to create synergy between the various communities working with this noble gas. Covering all topics from the production of the hyperpolarized gas to its applications, the editors have invited a leading team of experts to combine the physical chemistry within the various topics and across disciplines. The scope will range from the fundamental aspects of optical pumping to practical aspects of hyperpolarizers and hp-xenon handling. The applications section will focus on hyperpolarized xenon-129 detected in the dissolved phase or micro porous media where the chemical shift of xenon-129 can be used as a diagnostic probe. Appealing to researchers in the biomedical field and materials sciences, this reference book will provide background reading and future looking material in one place.

Chemical and Biochemical Approaches for the Study of Anesthetic Function, Part B, Volume 603, presents a coherent description of the campaign towards understanding anesthesia. It includes a variety of highly debated topics, including sections on computational approaches, best practices for simulating ligand-gated ion channels interacting with general anesthetics, computational approaches for studying voltage-gated ion channels modulation by general anesthetics, anesthetic parameterization, the kinetic modeling of electrophysiology data, evolving biophysical technologies, fluorescent anesthetics, lipids, membranes and pressure reversal, in vivo technologies, and more. Helps readers understand the wide array of topics surrounding anesthesia Includes sections on Pharmacophore QSAR, QM, ONIOM, and the kinetic modeling of electrophysiology data Broaches genetics, model organisms, and general genetic strategies

Each issue includes separate but continuously pagged sections called: Nuclear medicine, and: Ultrasound

Translational Neuroimmunology in Multiple Sclerosis

Journal of the National Cancer Institute

Planning, Delivery and Response Assessment

Augmented Reality Environments for Medical Imaging and Computer-Assisted Interventions

Gifted Mind

The Dr. Raymond Damadian Story, Inventor of the MRI

This book, first of its kind, combination of concise explanations and focused clinical information satisfies the needs of practicing radiologists, neurologists, neurosurgeons, plastic and other peripheral nerve surgeons in need of a handy reference and technologists performing MRN studies. Written by two experts of magnetic resonance neurography (MRN) practitioners and educators, this thoroughly illustrated resource delivers how the information you need to perform and interpret peripheral nerve MR imaging studies with confidence. Concise descriptions and high quality illustrations combined wit.

One man's search for truth on a personal journey of invention and faith! Today, magnetic resonance imaging machines (MRIs) and similar technologies are saving lives in hospitals and clinics throughout the world. In 1969, this kind of technique was just an idea in the visionary mind of Dr. Raymond Damadian. As a young boy, he watched his grandmother die painfully from breast cancer. Dr. Damadian would eventually decide on a career in medical research and pioneer this field of amazing research. Although in 1971 his concept of detecting tumors through magnetic resonance imaging was widely met with skepticism, he became the first researcher to do a full-body scan of a human being in 1977 in order to see if there was cancer present. His life has been an incredible journey of discovery helping you learn: How his concept for cancer detection was inspired and developed Why faith became an integral part of his work Why he is a strong supporter of the creativity and freedom found in patents. From resourcefully creating his discoveries on a shoestring budget to a battle with the business behemoth known as G.E., learn how the exciting development of this technology led him to a self-examination of his life and faith. What driving force is at the heart of what can arguably be called one of the greatest minds in the past 50 years and how does faith play a crucial role in his work?

This extensive text covers all aspects of diagnosis and endovascular treatment of neurological and neurological diseases of the pediatric central nervous system starting from their in utero expression. It also includes the vascular malformations of each district and their endovascular treatment. Besides the "normal" imaging techniques the advanced techniques (spectroscopy, diffusion, perfusion, and functional imaging) are covered in detail. Several topics that are often only superficially dealt with in other books are herewith covered in outstanding detail. The volume is richly illustrated with high-quality neuroradiological images, with pathological correlation where applicable. The rich analytic index makes it an easily usable tool in the everyday clinical practice. The book serves both as a reference for specialists (neuroradiologists, radiologists, neurosurgeons, neurologists, pediatricians) and as a teaching text for residents and fellows-in-training.

Second International Workshop, MLMIR 2019, Held in Conjunction with MICCAI 2019, Shenzhen, China, October 17, 2019, Proceedings

Neurodegenerative Disorders

Contrast-Enhanced Clinical Magnetic Resonance Imaging

From Brodmann's Post-Mortem Map to in Vivo Mapping with High-Field Magnetic Resonance Imaging

Brain, Head, Neck and Spine

Magnetic Resonance Imaging (MRI) is among the most important medical imaging techniques available today. There is an installed base of approximately 15,000 MRI scanners worldwide. Each of these scanners is capable of running many different "pulse sequences", which are governed by physics and engineering principles, and implemented by software programs that control the MRI hardware. To utilize an MRI scanner to the fullest extent, a conceptual understanding of its pulse sequences is crucial. Handbook of MRI Pulse Sequences offers a complete guide that can help the scientists, engineers, clinicians, and technologists in the field of MRI understand and better employ their scanner. Explains pulse sequences, their components, and the associated image reconstruction methods commonly used in MRI Provides self-contained sections for individual techniques Can be used as a quick reference guide or as a resource for deeper study Includes both non-mathematical and mathematical descriptions Contains numerous figures, tables, references, and worked example problems

This book provides, for the first time, a unified approach to the application of MRI in radiotherapy that incorporates both a physics and a clinical perspective. Readers will find detailed information and guidance on the role of MRI in all aspects of treatment, from dose planning, with or without CT, through to response assessment. Extensive coverage is devoted to the latest technological developments and emerging options. These include hybrid MRI treatment systems, such as MRI-Linac and proton-guided systems, which are ushering in an era of real-time MRI guidance. The past decade has witnessed an unprecedented rise in the use of MRI in the radiation treatment of cancer. The development of highly conformal dose delivery techniques has led to a growing need to harness advanced imaging for patient treatment. With its flexible soft tissue contrast and ability to acquire functional information, MRI offers advantages at all stages of treatment. In documenting the state of the art in the field, this book will be of value to a wide range of professionals. The authors are international experts drawn from the scientific committee of the 2017 MR in RT symposium and the faculty of the ESTRO teaching course on imaging for physicists.

This book constitutes the refereed proceedings of the First International Conference on Bioengineering and Biomedical Signal and Image Processing, BIOMESIP 2021, held in Meloneras, Gran Canaria, Spain, in July 2021. The 41 full and 5 short papers were carefully reviewed and selected from 121 submissions. The papers are grouped in topical issues on biomedical applications in molecular, structural, and functional imaging; biomedical computing; biomedical signal measurement, acquisition and processing; computerized medical imaging and graphics; disease control and diagnosis; neuroimaging; pattern recognition and machine learning for biosignal data; personalized medicine; and COVID-19.

Neuropsychological Assessment of Work-Related Injuries

Performance and Participation Outcomes for Individuals With Neurological Conditions